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REMARKS

By this amendment, claims 1-12, 21-24 and 29-35 are pending in the application. Of these, claims 1, 7, 21 and 29 are being amended and claims 33-35 are being added. Claims remain 13-20 and 25-28 withdrawn. The amendments and newly added claims are fully supported by the originally filed specification and original claims and add no new matter. Entry of the amendments and reconsideration of the present case is respectfully requested.

Restriction Requirement

The Examiner has required restriction between the following groups of claims:

- I. Claims 1-12, 21-24 and 29-32, drawn to a gas treatment apparatus, as defined by the Examiner; and
- II. Claims 13-20 and 25-28, drawn to a method of using a reactor, as defined by the Examiner.

Applicants affirm the election made by telephone on February 19, 2004 of the claims of group I, namely claims 1-12, 21-24 and 29-32. Claims 13-20 and 25-28 are being withdrawn as being to a non-elected invention. However, Applicants reserve the right to present claims 13-20 and 25-28 in a future divisional filing of the current case.

Rejection Under 35 U.S.C. 102(b) of Claims 1-12, 21-24 and 29-32

The Examiner rejected claims 1-12, 21-24 and 29-32 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,099,923 to Milberger. This rejection is traversed.

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Claim 1 is not anticipated by Milberger because Milberger does not teach "a catalytic reactor having an effluent gas inlet and an effluent gas outlet, the catalytic reactor comprising (i) an inner wall about an internal chamber, and (ii) an outer wall radially external to the inner wall and defining an outer reactor region therebetween, wherein the inner and outer walls at least partially define a convoluted effluent gas flow path through the outer reactor region and internal chamber," as recited in the claim.

Milberger discloses "reactor module 25 comprises a solid stainless steel block 94 having six cylindrical reaction chambers 96 uniformly spaced about the axial center of block 94" (column 5, lines 6-9.) Milberger also discloses that a selector valve transfers incoming gaseous reactant to a different reaction chamber after testing in each individual chamber is completed (column 7, lines 35-38.) Thus, Milberger discloses a selector valve to provide effluent gas one at a time into the separate cylindrical reaction chambers for individual testing in each of the chambers. Milberger does not teach a catalytic reactor that flows effluent through both an internal chamber and an outer reactor region that is radially external to the internal chamber. Milberger also does not teach reactor walls that at least partially define a convoluted effluent flow path through the internal chamber and outer reactor region. Accordingly, claim 1 and the claims depending therefrom are not anticipated by Milberger et al.

Claim 21 similarly recites "a catalytic reactor having an effluent gas inlet and an effluent gas outlet, the catalytic reactor comprising (i) an inner wall about an internal chamber, and (ii) an outer wall radially external to the inner wall and defining an outer reactor region therebetween, wherein the inner and outer walls at least partially define a convoluted effluent gas flow path through the outer reactor region and internal chamber," and thus this claim and the claims depending therefrom are also not anticipated by Milberger.

Claim 29 similarly recites a "catalytic reactor comprising (i) an inner cylindrical wall about an internal catalytic chamber, and (ii) an outer cylindrical wall that is radially external to the inner wall and defines an outer reactor region therebetween,

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wherein the inner and outer walls at least partially define a convoluted effluent gas flow path through the outer reactor region and internal chamber," and thus this claim and the claims depending therefrom are not anticipated by Milberger.

Claim 7 is not anticipated by Milberger because Milberger does not teach a substrate processing apparatus having a process chamber comprising "(a) a substrate support; (b) a gas supply to introduce a gas into the chamber; (c) a gas energizer to energize the gas to process a substrate or clean the chamber and thereby generate an effluent gas; and (d) an exhaust system to exhaust the effluent gas from the chamber" and a gas treatment apparatus comprising "(a) a conduit to receive the effluent gas from the exhaust system; (b) a catalytic reactor having an effluent gas inlet to receive the effluent gas from the conduit and an effluent gas outlet; and (c) a heater adapted to heat effluent gas in the catalytic reactor," as recited in the claim.

Milberger discloses that the "inventive automatic catalyst screening unit can be employed on a wide variety of different chemical reactions in which the reactants are fed to the catalytic reactor in the form of gases," (column 3, lines 6-10.) Thus, Milberger discloses a catalytic reactor that receives gases. Milberger does not teach a substrate processing apparatus comprising a gas energizer to energize a gas to process a substrate or clean a chamber, and an exhaust system to exhaust effluent gas from the chamber. Milberger also does not teach a gas treatment apparatus having a conduit adapted to receive the effluent gas from the exhaust system of the process chamber. Accordingly, claim 7 and the claims depending therefrom are not anticipated by Milberger.

Rejection Under 35 U.S.C. 103(a) of Claims 22-24

The Examiner rejected claims 22-24 under 35 U.S.C. 103(a) as being unpatentable over Milberger in view of U.S. Patent No. 4,207,290 to Lee. This rejection is traversed.

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Claim 21, from which claims 22-24 depend, is patentable over Milberger and Lee because the references do not teach or suggest "a catalytic reactor having an effluent gas inlet and an effluent gas outlet, the catalytic reactor comprising (i) an inner wall about an internal chamber, and (ii) an outer wall radially external to the inner wall and defining an outer reactor region therebetween, wherein the inner and outer walls at least partially define a convoluted effluent gas flow path through the outer reactor region and internal chamber," as recited in the claim. Milberger has been discussed above, and does not teach or suggest the catalytic reactor comprising the internal chamber and outer reaction region that is radially external to the internal chamber, and also does not teach or provide any suggestion to form a convoluted effluent flow path through the internal chamber and outer reaction region. Lee does not make up for these deficiencies. Lee discloses that "a flue gas scrubber for treating a gas with a slurry to react with and remove components therefrom comprises an elongated tubular drum which rotates about its longitudinal axis and includes a drying section disposed after a scrubbing section in the direction of movement of the slurry" (column 1, lines 38-43.) Thus, Lee discloses a scrubber having a drying section after a scrubbing section in the same direction of movement of the slurry, but does not teach or suggest a catalytic reactor having the recited internal chamber, outer region, and convoluted effluent gas flow path. Accordingly, as neither of the references teach or suggest the recited catalytic reactor, claim 21 and the claims depending therefrom are patentable over Milberger and Lee.

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CONCLUSION

The above-discussed amendments are believed to place the present application in condition for allowance. Should the Examiner have any questions regarding the above remarks, the Examiner is requested to telephone Applicant's representative at the number listed below.

Respectfully submitted,
JANAH & ASSOCIATES, P.C.

Date: June 15, 2004

By: _____


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